New Combinations in *Malva* (Malvaceae: Malveae)

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ABSTRACT. Four new combinations in *Malva*, *M. assurgentiflora*, *M. lindsayi*, *M. occidentalis*, and *M. wigandii*, and five replacement names, *M. australiana*, *M. canariensis*, *M. dendromorpha*, *M. linnaei*, and *M. pacifica*, are proposed to accommodate species of *Lavatera* that are more closely related to the type species of *Malva* than they are to the type species of *Lavatera*. These species are in the "Malvoid group," discussed by Ray in an earlier paper. One other *Lavatera* species that should also be placed in *Malva* is discussed but not formally transferred. Some lectotypes and neotypes are designated.

Elsewhere (Ray, 1995), I analyzed and discussed the relationships among species of *Malva* L., *Lavatera* L., and six outgroups. I described an analysis of morphological character data that initially appeared to have little value. That analysis was followed by an extensive molecular study and a reinterpretation of morphological characters that brought to light a new way to view these genera and problems associated with them. Ray (1994) and Ray (1995) included extensive discussions of morphological characters and evolutionary trends, generic relationships, relevant literature, chromosome numbers, biogeography, and dispersal issues and should be consulted for a better understanding of the results and conclusions briefly described here.

Based on my analyses of nuclear rDNA "Internal Transcribed Spacer" (ITS) sequence data and morphological characters (Ray, 1994, 1995), I concluded that the species now in *Malva* and *Lavatera* are all closely related in comparison to outgroups in *Alcea*, *Althaea*, *Anisodontea*, *Callirhoë*, and *Hibiscus*. Among *Malva* and *Lavatera* species, at least one well-supported group, consisting of a mixture of species from the two genera, could be defined on the basis of fruit differences and the ITS-based phylogenetic tree. A phylogenetic tree from Ray (1995) showing the results of analysis of ITS is shown in Figure 1. This figure also shows the major species group that can be defined with the additional support of fruit characters, and includes a listing of species that can be assigned to the group on this basis alone. Another more tentative grouping is also shown. Interesting geographic disjunctions in the distribution of species in *Malva* and *Lavatera* are indicated.

Malva L. and *Lavatera* L. have been increasingly problematic since Linnaeus (1753) reinterpreted Tournefort's (1706) generic concept for *Lavatera* and expanded *Lavatera* to cover a much wider range of species than Tournefort intended. Tournefort originally described the genus to segregate *Lavatera trimestris* (a species with relatively unusual characteristics) from *Malva* on the basis of fruit-axis characters. Linnaeus disregarded this and used epicalyx characters to distinguish the two genera. *Lavatera trimestris* L. has an unusual epicalyx that may have led Linnaeus to use this character, but the epicalyx of *L. trimestris* is atypical in comparison to those of nearly all other species traditionally included in *Lavatera* and *Malva*. These genera have long been separated by most workers on the "unsatisfactory" (Fernandes, 1968a) basis of fusion or non-fusion of epicalyx bracts. I found the use of epicalyx characters for the generic distinction to be untenable based on extensive morphological and molecular analyses (Ray, 1994, 1995).

Several species presently in *Lavatera* are closely related to species in *Malva*, in particular to the type species *Malva sylvestris* L. In fact, some species currently included in *Lavatera* are more closely related to *Malva sylvestris* than are some other species traditionally included in *Malva*; they are among the core *Malva* species. My "Malvoid group" (see Fig. 1) includes some *Malva* species plus those species currently included in *Lavatera* that are very closely related to *Malva sylvestris* L. These close relationships among *Lavatera* and *Malva* species are strongly supported by the analyses of ITS data and by fruit characters (Ray, 1995). When the analysis is forced to retain the traditional division between the genera, the trees become significantly longer. Maximum likelihood testing using the forced tree also shows that, given the ITS data, the traditional generic arrangement (based on the epicalyx) is significantly less likely than the tree found.

Species in the Malvoid group (so named because it includes the type species of *Malva*) have true mericarps that: (a) are rounded in only the axial direction on the abaxial side, (b) have lateral angles

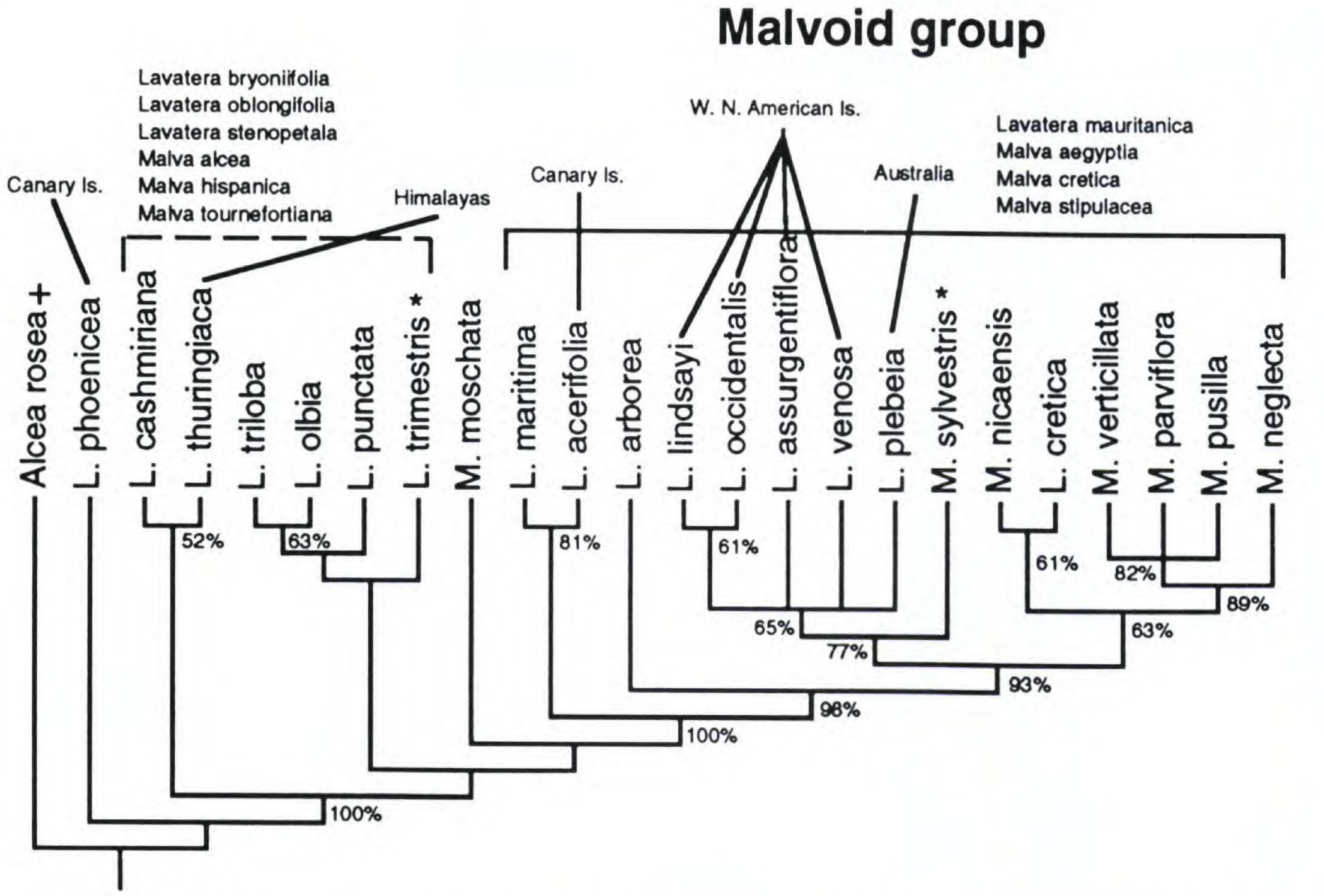

Figure 1. ITS rDNA sequence analysis of *Lavatera* spp., *Malva* spp., and the outgroup *Alcea rosea*. Refer to Ray (1994, 1995) for details of other outgroups, other trees found, morphological characters, and methods, etc. A strict consensus of two PAUP trees, length 367 steps, consistency index 0.719. Bootstrap values from 1000 replicates are shown on branches. The "Malvoid" group of those species closely related to *Malva sylvestris* L. based on fruit morphology and ITS analysis (bracket), outgroup (indicated by +), type species of genera (indicated by *), and notable geographic disjunctions in distribution are shown. Species not surveyed for ITS (smaller type, above group bracket) have been added to the Malvoid group by examination of fruit morphology. Another, more tentative group consisting of species related to *Lavatera trimestris* L. (also based on fruit morphology and ITS) is shown by a dashed bracket, with species above the bracket added based on fruit characters.

or edges, (c) completely or nearly completely enclose the seed, (d) do not separate readily from the seed, and (e) act as a dispersal unit. The Malvoid group includes cosmopolitan weedy species in both *Lavatera* and *Malva* and also includes the disjunct *Lavatera* species that occur in Australia and the New World (see Fig. 1).

Other species now in both *Lavatera* and *Malva* that are related to *Lavatera trimestris* L. (see Fig. 1) have fruits that differ from Malvoid group fruits in the following ways: (a) rounded axially and laterally on the abaxial side, (b) devoid of lateral angles or edges, being rounded in the position where Malvoid fruits have edges, (c) do not completely enclose the seed, (d) separate readily from the seed, (e) form more of a valve than a dispersal unit, and (f) are therefore something other than true mericarps. These species form a more tentative group that requires more work and are not further discussed here.

Alefeld (1862) proposed a significant rearrangement of the species in tribe Malvaeae, retaining some traditional genera with a much different mix of species, a return to a more narrow circumscription of *Lavatera*, and one new genus, *Axolopha*. Alefeld's (1862) work was not widely followed. His ideas were similar to my (Ray, 1994, 1995) conclusions in that the proposed genera included a mixture of species from different genera. Interest in Alefeld's (1862) work has resurfaced recently; Krebs (1994b) proposed as a genus *Dinacrusa* (formerly a subgenus of Alefeld's *Axolopha*) to include a mixture of species from *Althaea* and *Malva*. None of the species discussed by Krebs (1994b) were included in my (Ray, 1995) ITS study, so the ITS data cannot be used to evaluate Krebs's proposal. I did, however, examine morphological characters of some species Krebs (1994b) discussed, and these species were included in my (Ray, 1995) Malvoid group on the basis of fruit characters. Krebs (1994b) provided scanning electron micrographs of the schizocarps/mericarps of several of the species

he discussed, and these illustrations clearly show the characters that define my (Ray, 1995) Malvoid group and the genus *Malva*. Accordingly, the evidence suggests that the species discussed by Krebs (1994b) should be included in *Malva*, but I prefer to have the support of ITS sequence evidence before making further proposals. In another paper, Krebs (1994a) laid out a general scheme of changes he presumably intends to propose in the future (some aspects are proposed in the two papers cited here) with evidence in the form of a key. Certain yet-to-be-proposed aspects of this general scheme are clearly at odds with the evidence I presented in my earlier (Ray, 1995) paper, wherein I included a discussion of the scheme and the characters used in the accompanying key.

Keys and descriptions to the North American taxa in *Lavatera* discussed in this paper were provided by Fryxell (1988). In addition, a discussion and detailed description of *Lavatera lindsayi* Moran and *Lavatera occidentalis* S. Watson were provided by Moran (1996). Other species are discussed in detail by Fernandes (1968b, 1968–1969).

My research (see Ray, 1994, 1995) was initially focused on *Lavatera* as traditionally circumscribed and was expanded to include *Malva* when *Malva* was found to be too closely related to be used as an outgroup. A complete revision of *Malva* that includes studies of fruit characters and ITS rDNA sequence data is now badly needed. Studies of *Malva* must consider those species currently in *Lavatera* that are more closely related to the type species *Malva sylvestris* L. than they are to *Lavatera trimestris* L., that is, those in the Malvoid group. To promote understanding of relationships in the two genera and to aid future systematic work in these groups, the following new names and new combinations in *Malva* are proposed to accommodate some of the Malvoid-group species currently in *Lavatera*, until such time as a comprehensive revision of *Malva* can be completed.

1. Malva assurgentiflora (Kellogg) M. F. Ray, comb. nov. Basionym: *Lavatera assurgentiflora* Kellogg, Proc. Calif. Acad. Sci. 1: 14. 1854. *Althaea assurgentifolia* (Kellogg) Kuntze [misspelled], Revis. Gen. Pl. 1: 66. 1891. *Saviniona assurgentiflora* (Kellogg) E. Greene, Leafl. Bot. Observ. Crit. 2: 163. 1912. TYPE: U.S.A. California: Ventura Co., West Anacapa Island, 350′, 3 Oct. 1978, *Timbrook & Philbrick 652* (neotype, selected here, SBBG).

Saviniona dendroidea E. Greene, Leafl. Bot. Observ. Crit. 2: 161. 1912. TYPE: U.S.A. California: San Miguel Is., Sep. 1886, *Greene s.n.* (isotype, UC). Fryxell (1988) suggested a holotype might exist at ND-G; the curators there were unable to produce the specimen.

Saviniona suspensa E. Greene, Leafl. Bot. Observ. Crit. 2: 162. 1912. TYPE: U.S.A. California: San Diego (in cultivation), 1889, *Vasey s.n.* (holotype, US).

No material matching the protologue of *Lavatera assurgentiflora* Kellogg could be found at CAS, DS, JEPS, ND-G, or UC. Kellogg specimens may also be found at B, BM, F, GH, GRA, LE, NY, PH, and US (Stafleu & Cowan, 1976–1988), but searches of these institutions yielded no material that could be considered the type. Inexplicably, Greene (1912) wrote that Kellogg's description was based on a plant from near San Francisco, California (presumably cultivated or escaped). In the protologue, the only locality is given as "Anacapa Island" [singular], without citation of a type specimen as such. There are three islands in the small group called Anacapa, so the type locality is somewhat vague. It is likely that the type specimen was among those lost at CAS in the 1906 San Francisco earthquake and fire. Kellogg used the common name "Royal Mallows" and mentioned in his description the petals that become more reflexed as the flowers fade, and the "rising, falling, and ascending curve" of the peduncle. Both of these are very good diagnostic characteristics. Brandegee (1890) wrote that *L. assurgentiflora* was described from a specimen cultivated in a park in Santa Barbara, California, collected by "Dr. Trask," who was told that the seed came from "the island of Anacapa."

I attempted to find suitable material for neotypification at CAS, SBBG, and UC. I have selected a neotype for *L. assurgentiflora* Kellogg from among three SBBG specimens from Anacapa localities. This material, *Timbrook & Philbrick 652*, has good flowers and fruits. The leaves are relatively small, suggesting a drought-stressed condition that I have observed in various species in *Lavatera* and *Malva*.

Lavatera assurgentiflora Kellogg subsp. *glabra* Philbrick, in Power, California Islands: 177. 1980. TYPE: U.S.A. California: Los Angeles Co., Santa Catalina Is., Bird Rock, 23 Sep. 1961, *E. R. Blakley 4739* (SBBG, CAS). This collection, although specifically cited by Philbrick (1980) in his description, has not been annotated by him.

This name was originally applied to populations of *L. assurgentiflora* that occur on Santa Catalina and San Clemente Islands (the two southernmost islands in the California group). This subspecies was briefly mentioned but not recognized by Hill (1993).

The characteristics of subspecies *glabra*, as de-

scribed by Philbrick (1980), are much more obvious in living specimens than in dried material, and particularly in comparison to living specimens of subspecies *assurgentiflora* grown under common conditions. Even so, the subspecies is sufficiently distinct to be recognized on specimens such as *Raven 17579* (UC), *Junak 1847* (UC), *Blakley 6414* (CAS), 2 sheets of *E. R. Blakley 4739* (the type, cited above), as well as type material of synonyms cited below, all of which match material I have grown. Other collections from Santa Catalina Island and San Clemente Island annotated as subspecies *glabra* by G. Krebs appear to correspond partially to my concept of the subspecies in having glabrous leaves and larger flowers with unreflexed petal blades, but are not as clear a match in leaf shape for the living material I have seen, and may have been annotated on the basis of locality. Some dried specimens have lost their flower color. In addition to the glabrous leaves and column and erose petal apices described by Philbrick (1980), subspecies *glabra* has a lower (rather decumbent in comparison with subsp. *assurgentiflora*) overall growth form, a more mesophytic appearance, larger, more glossy, lighter green leaves with more rounded lobes, and larger flowers that are lighter in color and lack the reflexed blades of mature petals of subspecies *assurgentiflora.*

Living specimens I have grown display the characteristics described by Philbrick, in addition to the other characteristics mentioned above, and match those of the type. Vouchers representing specimens of subspecies *glabra* I have grown (*Ray 324, Ray 903*) are at UC. Subspecies *glabra* has an ITS rDNA sequence identical to that of subspecies *assurgentiflora* (Ray, 1995), so the two taxa are obviously quite closely related. Ray (1995) found cases of ITS variation with and without morphological variation (and vice versa), so at least in this group ITS characters alone do not clearly provide evidence for or against the recognition of subspecific taxa.

Subspecies *glabra* probably was much more widespread on Santa Catalina and San Clemente Islands in the past. It may not be restricted to the two southern islands; at least one specimen referable to subspecies *glabra* has been found on Santa Cruz Island (*Junak 1847*, 1990, UC). Philbrick (1980) stated that *L. assurgentiflora* does not occur in the wild on Santa Cruz Island, but that specimens were cultivated near a university field station and at Stanton Ranch on Santa Cruz Island. In my experience, subspecies *glabra* is rarely cultivated. The Junak specimen is apparently a wild collection. It is unclear whether this record indicates a wider historical distribution, a migration forming a zone in which both subspecies overlap, or merely a spread due to escape from cultivation. A careful and detailed field survey of extant populations on all the islands is badly needed before a positive determination of the status of this subspecies can be made.

The following synonyms of *L. assurgentiflora* subsp. *glabra* have been identified and typified:

Saviniona clementina E. Greene, Leafl. Bot. Observ. Crit. 2: 160. 1912. TYPE: U.S.A. California: San Clemente Island, June 1903, *B. Trask 282* (lectotype, here designated, US).

Greene's (1912) protologue stated ". . . a single tree on San Clemente Island, whence specimens were taken in June, 1903, by Blanche Trask." Fryxell (1988) suggested that the holotype of *Saviniona clementina* E. Greene might be found at ND-G; no collections that match the protologue were found there. At US I found *Trask 282* and *Trask 283*, collected on San Clemente Island in June 1903. These are from opposite ends of the island (in conflict with Greene's statement above); Greene (1912) did not give the exact location of the material he saw. These Trask specimens fall within my circumscription of subspecies *glabra.* Because I found no material that more closely matches the protologue, I have selected *Trask 282* as a lectotype.

Saviniona reticulata E. Greene, Leafl. Bot. Observ. Crit. 2: 161. 1912. TYPE: U.S.A. California: Los Angeles Co., Santa Catalina Is., Bird Rock, Feb. 1898, *B. Trask s.n.* (isotypes, K, US).

Fryxell (1988) indicated that the holotype of *Saviniona reticulata* E. Greene might be found at ND-G; no collections matching the protologue were found there. At K and US, I found Trask collections from the same date and location; I consider them to be isotypes. The K specimen includes the curious notation "Bud and fls. snow-white" despite the fact that it appears to be quite a normal specimen that falls within my circumscription of subspecies *glabra.*

2. **Malva australiana** M. F. Ray, nom. nov. Replaced name: *Lavatera plebeia* Sims, Bot. Mag. 48: pl. 2269. 1821. Not *Malva plebeja* Stevenson, Bull. Soc. Nat. Mosc. 29 (1856) I. 325. 1856. *Althaea plebeia* (Sims) Schultes ex Steudel, Nomencl. bot. ed. 2 i. 66. 1840–1841. TYPE: colored drawing (Sim's plate 2269) from a small plant raised in a pot at J. Knight's (1777–1855) Exotic Nursery, King's Road, Chelsea. Plants of Australian origin, probably grown from seed (but this is unknown).

Malva australiana (*Lavatera plebeia*) is a well-known Australian species (Barker, 1986; Hnatiuk, 1990; Marchant et al., 1987; Mitchell, 1983). G. Krebs annotated a number of K specimens of *Lavatera plebeia*. All of these specimens fall within my circumscription of *Malva australiana*. G. Krebs annotated one specimen as possibly the type of *L. plebeia*, but he has not published his reasons for selecting that particular specimen. It is possible that this material had the same origin as the seed from which the plants that Sims saw were grown at the nurseries mentioned in the protologue. However, it is probably not possible to determine this. Sims's plate 2269 and his description (from apparently different plants growing in the ground at the nursery of Whitley, Milne, and Brame) are in agreement, and plate 2269 can therefore be considered the type.

Two infraspecific taxa of *Lavatera plebeia* were recognized by G. Krebs among the K specimens mentioned above. These are variety *tomentosa* and subspecies/variety *plebeia* (the rank designations are mixed in Krebs's annotations). Judging from these and other specimens, Australian floristic treatments (as cited above), and the opinion of a colleague in Australia (J. Conran, pers. comm. 1996), I think there may be some validity to these infraspecific taxa, but a careful examination of living specimens in the field is needed. The live specimens I have examined all appear to correspond to variety *tomentosa*.

3. Malva canariensis M. F. Ray, nom. nov. Replaced name: *Lavatera acerifolia* Cavanilles, Anales Ci. Nat. 6: 339. 1803. Not *Malva acerifolia* Nuttall ex Walpers, Rep. 1: 296. 1842. *Saviniona acerifolia* (Cavanilles) P. Webb & Berthelot, Hist. Nat. Iles Canaries, Tome troisieme ("Phytographia Canariensis" 1836–1841), Paris, Bethune, (part 2 sec. 1): 31. *Malva acerifolia* (Cavanilles) Alefeld, Oesterr. Bot. Z. 12: 258. 1862, illegitimate, later homonym. *Althaea acerifolia* (Cavanilles) Kuntze, Revis. Gen. Pl. 1: 66. 1891. TYPE: Spain. Madrid: H. R. Mat. (Hortus Regius Matritensis, now known as Real Jardin Botánico), July 1803, ex Canariensis Seminibus (holotype, MA).

The July 1803 specimen, identified as the type by Garilleti (1993), has no collector or number notation. The protologue included the following: "Se cría en Tenerife, y se cultiva en nuestro Jardin: nació de semillas enviadas por el Ciudadano Broussonet." (It grows in Tenerife, and is cultivated in our garden: derived from seeds sent by citizen Broussonet.) Citizen Broussonet is probably Pierre Marie Auguste Broussonet (1761–1807) of Montpellier, who spent 1799–1803 in the Canary Islands (Stafleu & Cowan, 1976–1988). The handwriting on the specimen matches that in samples of Cavanilles's writing (Candollea 28: 433–434. 1973).

4. Malva dendromorpha M. F. Ray, nom. nov. Replaced name: *Lavatera arborea* L., Sp. Pl. 690. 1753. Not *Malva arborea* St. Hilaire, Fl. Bras. Mer. I 215, t. 135, f. 4 1827. *Malva arborea* (L.) P. Webb & Berthelot, Hist. Nat. Iles Canaries, 3(2, 1): 30, illegitimate, later homonym. *Althaea arborea* (L.) Kuntze, Revis. Gen. Pl. 1: 66. 1891, illegitimate, later homonym. TYPE: ex Hort. Upsala, *LINN 871.1* (lectotype, designated by Fernandes (1968b)).

5. Malva lindsayi (Moran) M. F. Ray, comb. nov. Basionym: *Lavatera lindsayi* Moran, Madroño 11: 158. 1951. TYPE: Mexico. Baja California: Guadalupe Is., Outer Islet (Isla Exterior), 16 Apr. 1948, *Moran 2944* (holotype, DS; isotypes, CAS, UC).

6. Malva linnaei M. F. Ray, nom. nov. Replaced name: *Lavatera cretica* L., Sp. Pl. 691. 1753. Not *Malva cretica* Cavanilles, Diss. 5: 280. pl. 138. f. 2. 1788. *Althaea cretica* (L.) Kuntze, Revis. Gen. Pl. 1: 66. 1891, illegitimate, later homonym. TYPE: ex Hort. Upsala, *LINN 871.10* (lectotype, designated by Fernandes (1968b)).

Fernandes (1968b) cited five synonyms of *Lavatera cretica* L.:

Lavatera cretica var. *stenophylla* Willkomm, in Willkomm & Lange, Prodr. Fl. Hispan. 3: 581. 1878. (Fernandes cited 1881; this date does not conform with information given in Stafleu & Cowan, 1976–1988). This variety was subsequently raised to specific rank as *Lavatera stenophylla* (Willkomm) Rouy, Fl. Fr. 4: 42. 1897, but if the epithet were used in *Malva* it would create a later homonym of *M. stenophylla* Hoffmanns. Verz. Pfl.-Kult., Nachtr. 2:156. 1828.

Lavatera silvestris Brot., Fl. Lusit. 2: 277. 1804. If the epithet were used in *Malva* it would create an orthographic variant and later homonym.

Lavatera Isabellae Sennen "in schede?" appears not to have been validly published. *Malva mauritiana* Willkomm, in Willkomm & Lange, Prodr. Fl. Hispan. 3: 581. 1878 (see note about date above) is already an orthographic variant and later homonym.

Malva willkommiana Scheele, Linnaea 21: 570. 1848, is the only name cited by Fernandes (1968b) that could potentially be used to replace *L. cretica*. A specimen collected by Willkomm in the region called Malagam is cited in the protologue without date or specimen number. Scheele's herbarium and types are "unknown" (Stafleu & Cowan, 1976–1988), but Willkomm types may be found at COI, which does not lend material from the Willkomm herbarium. I attempted to obtain information from COI on the existence of a type for *Malva willkommiana* Scheele, and/or a photograph or photocopy of potential types, but have received no reply, and so for the present time I must assume that the name cannot be applied.

7. Malva occidentalis (S. Watson) M. F. Ray, comb. nov. Basionym: *Lavatera occidentalis* S. Watson, Proc. Amer. Acad. Arts 11: 113, 124. 1876. *Althaea occidentalis* (S. Watson) Kuntze, Revis. Gen. Pl. 1: 66. 1891. *Saviniona occidentalis* (S. Watson) E. Greene, Leafl. Bot. Observ. Crit. 2: 163. 1912. TYPE: Mexico. Baja California: Guadalupe Is., 1875, *Palmer* 17 (holotype, GH not seen; isotypes, MO; also BM, CM, K, NY, PH not seen).

Lavatera insularis S. Watson, Proc. Amer. Acad. Arts 12: 249. 1877. *Althaea insularis* (S. Watson) Kuntze, Revis. Gen. Pl. 1: 66. 1891. *Saviniona insularis* (S. Watson) E. Greene, Leafl. Bot. Observ. Crit. 2: 163. 1912. TYPE: Mexico. Baja California: Coronado Islands, 25 Feb. 1876, *Cleveland s.n.* (holotype, GH not seen; isotype, UC).

8. Malva pacifica M. F. Ray, nom. nov. Replaced name: *Lavatera venosa* S. Watson, Proc. Amer. Acad. Arts 12: 249–250. 1877. Not *Malva venosa* Thunberg, Prod. Pl. Cap. 119. 1800. *Althaea venosa* (S. Watson) Kuntze, Revis. Gen. Pl. 1: 66. 1891. *Saviniona venosa* (S. Watson) E. Greene, Leafl. Bot. Observ. Crit. 2: 163. 1912. TYPE: Mexico. Baja California: San Benito Island, Dec. 1876, *T. H. Streets s.n.* (holotype, US).

Watson (1877) cited the type as "from San Benito Island [singular] . . . collected by Dr. T.H. Streets, U.S.N., December, 1875." Fryxell (1988) cited the type as "Dec 1876, Streets s.n., (US!)"; his citation of the date matches that on the specimen, whereas Watson's does not. Islas San Benitos consist of three small islands; Streets did not indicate on which of these the type specimen was found.

9. Malva wigandii (Alefeld) M. F. Ray, comb. nov. Basionym: *Axolopha wigandii* Alefeld, Oesterr. Bot. Z. 12: 259. 1862. TYPE: "Cerro San. Anton pr. urb. Malaga 1000–1500'" Apr. 1845, *Willkomm 858* (COI) (seen as illustrated by Fernandes, 1968b).

Lavatera maritima Gouan, Ill. Observ. Bot. 46. 1773. *Althaea maritima* (Gouan) Kuntze, Revis. Gen. Pl. 1: 66. 1891. TYPE: *LINN 871.5* (lectotype, selected here).

Lavatera africana Cavanilles, Diss. 5: 282, pl. 139, fig. 1. 1788. TYPE: *Broussonet* 291 (lectotype, selected by Fernandes (1968b), MA).

Lavatera maritima Gouan is the oldest name applicable to the material I include in my circumscription of *Malva wigandii*. The combination *Malva maritima*, however, would be a later homonym of *M. maritima* Lamarck, Fl. Fr. 3: 140. 1779 (= *Malva tournefortiana*) and also of *M. maritima* Salisbury, Prod. 381. 1796 (= *Althaea officinalis*). The next oldest applicable name is *Lavatera africana* Cavanilles; the combination *Malva africana* would be a later homonym of *M. africana* Miller ex Steudel, Nomencl. bot. ed. I. 506. Fernandes (1968b) described extensive evidence showing that *L. africana* Cavanilles is referable to *L. maritima*. Fernandes cited *Axolopha wigandii* Alefeld among the synonyms of *L. maritima* and provided an illustration of the type specimen of *A. wigandii*. I believe Fernandes was correct, so I am compelled to adopt *Malva wigandii* as the name to be applied to *Lavatera maritima* when that species is transferred to *Malva*.

Typification of *Lavatera maritima* Gouan: Gouan types are to be found at C, KEIL, LINN, MEL, P-HA, SBT, and UPS (Stafleu & Cowan, 1976–1988). The only material that might be connected with Gouan was found at LINN. Specimen *LINN 871.5* has a note "Gouan" in Linnaeus's hand. Fernandes (1968b: 409, footnote 2) suggested that *LINN 871.5* is a likely isotype, probably a duplicate given to Linnaeus by Gouan. Another specimen, *LINN 871.6*, has been identified by Fernandes as *L. maritima*, but cannot be connected with Gouan. I include both of these specimens within my circumscription of *Malva wigandii*. Gouan's illustration shows a tomentose plant of generalized "*Malva*-like" appearance, but lacks floral detail, and therefore does not clearly match any one species in *Lavatera* or *Malva*. His illustration cannot be used to establish application of the name. Gouan's description essentially refers to a tomentose shrub that has flowers with bluish (I interpret Gouan's "dilute caerulescens" to include lavenderish, particularly in comparison to other species) petals and dark, pur-

plish claws. Only two of the taxa I recognize are shrubs with flowers that might match that description, and only one of them is tomentose. In addition, the non-tomentose species (*Malva canariensis*) has a distinctive crinkled petal characteristic that was not mentioned by Gouan and does not match the petals shown in his illustration. Gouan mentioned that the flowers of his *L. maritima* were of a size similar to that of flowers of *Malva rotundifolia* L. (This name has recently been proposed formally for rejection in favor of *M. pusilla* Smith in Sowerby (Turland, 1996) after many years of de facto rejection by European workers, but apparently not by American (Morton, 1937, and later floristic works)—see also Dalby (1968) and others cited in Turland (1996).) *Malva pusilla* Smith in Sowerby has flowers about 11 mm in diameter (Dalby, 1968), much smaller than those of the material that matches other critical aspects of the description mentioned above, and much smaller than the apparent flower size in Gouan's illustration. There has been confusion about the small-flowered *Malva* species in modern times (Morton, 1937), and I suspect this was even greater in Gouan's time, so I am inclined to ignore this size difficulty. Given the above, I am using *Lavatera maritima* Gouan as the oldest name applicable to the material that I include in my circumscription of *Malva wigandii.* A thorough search has failed to turn up any other material that might be the type of *L. maritima.* I select *LINN 871.5* as the lectotype of *L. maritima.*

Fernandes (1968b) included in synonymy of *L. maritima* Gouan the following: *Lavatera bicolor* (Rouy) Stapf, Bot. Mag. pl. 8997. 1923. Basionym: *Lavatera bicolor* Rouy, J. Bot. (Morot) 1897: 86. No type was cited by Rouy, but the illustration by Staph may serve as type. *Lavatera rupestris* Pomel, Nouv. Mat. Fl. Atl.: 343. 1874. Typification of these names has not yet been possible, but both were reduced to varietal status within *L. maritima* following their publication (see Fernandes, 1968b). Fernandes (1968b) also cited other subspecies and varieties as synonyms of *L. maritima* Gouan, stating that all are environmental variations without taxonomic value.

The name *Lavatera bicolor,* cited as a synonym of *L. maritima* by Fernandes (1968b), is used in the horticultural trade in northern California, and may be established in horticultural use elsewhere. Some live specimens I have used in my studies were purchased under that name, but fall within my circumscription of *Malva wigandii.* These horticultural specimens were used in my rDNA ITS study (Ray, 1995) in addition to wild-collected material from Europe and north Africa, and all were found to be identical in ITS sequence. Specimens show some morphological variation among populations in various parts of Europe and north Africa, suggesting that two or more infraspecific taxa may be present. Several such taxa have been described within the synonyms of *M. wigandii,* but Fernandes (1968b) considered this variation to be environmental in nature. Detailed study of wild populations will be required to shed further light on the variation within *Malva wigandii.*

Lavatera mauritanica Durieu, in Duchartre, Rev. Bot. 2: 436 (1847), is probably in the Malvoid group and if so should be transferred to *Malva.* However, at present only morphological evidence is available to support this, and it is premature to propose a generic transfer until this species can be included in the ITS rDNA sequence studies, restriction fragment (RFLP) studies, and other investigations in progress.

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